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UTILITY PATENT APPLICATION TRANSMITTAL

(Only for new nonprovisional applications under 37 CFR 1.53(b))

Attorney Docket No.	068757.P063C	*Total Pages (all documents)*	19
First Named Inventor or Application Identifier	THEODORE G. HABING		
Express Mail Label No.	EM560890356US		

APPLICATION ELEMENTS
See MPEP chapter 600 concerning utility patent application contents.

ADDRESS TO: Assistant Commissioner for Patents
Box Patent Application
Washington, DC 20231

1. ☒ *Fee Transmittal Form *(e.g. PTO/SB/17)*
(Submit an original, and a duplicate for fee processing)

2. ☒ Specification *Total Pages* 11
(preferred arrangement set forth below)
- Descriptive Title of the Invention
- Cross References to Related Applications
- Statement Regarding Fed sponsored R&D
- Reference to Microfiche Appendix
- Background of the Invention
- Brief Summary of the Invention
- Brief Description of the Drawings *(if filed)*
- Detailed Description
- Claims
- Abstract of the Disclosure

3. ☒ Drawing(s) (35 USC 113) *Total Sheets* 2

4. ☒ Oath of Declaration *Total Pages* 3
a. ☐ Newly executed (original copy)
b. ☒ Copy from prior application (37 CFR 1.63(d))
(for continuation/divisional with Box 16 completed)

i. ☐ DELETION OF INVENTOR(S)
☐ Signed statement attached deleting inventor(s) named in prior application, see 37 CFR 1.63(d)(2) and 1.33 (b).

5. ☐ Microfiche Computer Program *(Appendix)*

6. ☐ Nucleotide &/or Amino Acid Sequence Submission
(if applicable, all necessary)
a. ☐ Computer Readable Copy
b. ☐ Paper Copy (identical to computer copy)
c. ☐ Statement verifying identity of above copies

ACCOMPANYING APPLICATION PARTS

7. ☐ Assignment Papers (cover sheet & document(s))
8. ☐ 37 CFR 3.73(b) Statement ☐ Power of Attorney
(when there is an assignee)
9. ☐ English Translation Document *(if applicable)*
10. ☐ Information Disclosure ☐ Copies of IDS
Statement (IDS)/PTO-1449 Citations
11. ☐ Preliminary Amendment
12. ☐ Return Receipt Postcard (MPEP 503)
13. ☐ *Small Entity ☐ Statement filed in prior app
Statement(s) Status still proper and desired
(PTO/SB/09-12)
14. ☐ Certified Copy of Priority Document(s)
(if foreign priority is claimed)
15. ☐ Other:

** Note for Items 1 & 13: In order to be entitled to pay small entity fees, a small entity statement is required (37 CFR §1.27), except if one filed in a prior application is relied upon (37 CFR §1.28)*

16. If a CONTINUING APPLICATION, *check appropriate box and supply the requisite information below & in a preliminary amendment:*
☒ Continuation ☐ Divisional ☐ Continuation-in-part (CIP) of prior application no: **09/271,689**
Prior application information: Examiner: ***JOHN MULCAHY*** *Group/Art Unit:* ***3764***

For Continuation or Divisional Apps only: The entire disclosure of the prior application, from which an oath or declaration is supplied under Box 4b, is considered a part of the disclosure of the accompanying continuation or divisional application and is hereby incorporated by reference. The incorporation can only be relied upon when a portion has been inadvertently omitted from the submitted application parts.

17. CORRESPONDENCE ADDRESS

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Our Ref. No. 068757.P063C
Express Mail No. RM560890356US

UNITED STATES PATENT APPLICATION FOR

EXERCISE MACHINE PRESS ARM

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BACKGROUND OF THE INVENTION

1. RELATED APPLICATIONS

This is a continuation of co-pending application serial number 09/271,689 filed March 18, 1999 (assigned U.S. Patent No. 6,080,091), which is a continuation of application serial number 08/895,517 filed July 16, 1997, abandoned.

2. FIELD OF THE INVENTION

This invention relates generally to the field of physical exercise equipment and, particularly, to a press arm for performing upper body exercises.

3. PRIOR ART

The bench press has long been a popular exercise for developing the muscles of the upper body. This exercise is traditionally performed in a supine position on a bench using a barbell. Within the last few decades, exercise machines have been developed with pivoting press arms coupled to a stack of weights that allow the operator to perform exercises from a seated position. Typically, the seat of the machine is adjustable so that shoulder press, incline press, chest press, and decline press exercises can all be performed using the same press arm.

A conventional press arm is pivotally attached to the frame of an exercise machine and has a pair of fixed handles for use by the operator. The operator pushes the press arm directly away from the torso during performance of the exercise. However, it has been found that a more thorough exercise can be achieved if the operator is able to move his or her arms inwardly (in what is commonly referred to as a "butterfly" or "fly" motion) as the press arm is pushed outwardly. Exercise machines have been developed to afford this additional component of movement. For example, U.S. Patent No. 5,437,589 discloses such a machine for performing shoulder, incline, chest and/or decline press exercises. While the apparatus

disclosed in the aforementioned patent provides a near optimal upper body exercise, the apparatus does not lend itself to incorporation in a relatively low cost multi-station exercise machine.

Some exercise machines have employed press arms with secondary pivots to provide the additional freedom of movement necessary for the operator to move his or her arms inwardly as the press arm is pushed outwardly. An example of such a device is shown in U.S. Patent No. 4,949,951 issued to Deola. This patent discloses an exercise machine with a press arm having forward extension members that are coupled to the press arm with universal joints. The extension members permit the user of the machine to perform a "dumbbell fly" movement. Owing to the universal joint between the extension members and the press arm, the extension members will naturally fall towards the floor if let go. This is inconvenient for the user of the apparatus and, further, requires that the user exert an upward force on the extension members simply to maintain them in position for performing an exercise.

Another example of a prior art exercise machine is shown in U.S. Patent No. 5,580,341 issued to Simonson. This machine for performing a shoulder press exercise has a pair of independent arms coupled to the machine by a primary hinge with a horizontal axis and respective secondary hinges. The design of the machine permits inward movement of the arms, but does not allow a true fly movement. The axes of the secondary hinges are preferably oriented at symmetric acute angles with respect to the primary hinge. This arrangement of the primary and secondary hinges operates to divide the exercise resistance into a longitudinal component and a lateral component. The lateral motion of the arms in Simonson's machine is limited outwardly by an interconnecting strap and inwardly by respective stops. These stops preclude anything more than a straight press or inward press movement during performance of a press exercise. Since outward movement of the arms is prevented by the stops, a full fly movement cannot be performed.

Still another example of a prior art machine is the Freedom Chest Press manufactured by Pacific Fitness Corporation. In a manner somewhat analogous to Deola's exercise machine, the Freedom Chest Press has a pair of extension members pivotally coupled to the main press arm. The extension members pivot about respective secondary axes that are perpendicular to the main pivot axis of the press arm. Outward movement of the extension members is limited by respective stops, and thus, as with Simonson's machine, a full fly movement cannot be performed.

Each of these prior art devices has certain disadvantages which are overcome by the apparatus of the present invention. One of the objects of the present invention is to provide an exercise machine offering combined press and fly movements without the use of stops to limit the amount of fly movement available to the user. Another object of the present invention is to provide exercise arms for performing the combined press and fly movement exercises that have a gravity-induced natural rest position corresponding to the starting position for such exercises.

SUMMARY OF THE INVENTION

The present invention provides an improved press arm with which an operator can perform either a traditional straight chest press exercise or may incorporate "butterfly" motion during the performance of the chest press exercise. The press arm has three principal components. A main arm is pivotally coupled to the frame of the exercise machine at a main pivot in the same manner as conventional press arms. The main arm includes a cross-beam to which a pair of handle arms are pivotally coupled at secondary pivots. The axes of the secondary pivots are orthogonal to the axis of the main pivot and are inclined with respect to vertical when the press arm is in a rest position. This inclination causes the handle arms to assume a natural rest position under the influence of gravity. The rest positions of the handle arms place the press arm handles at a comfortable starting position for performance of a press exercise. Stops to limit the inward or outward travel of the handle arms are not necessary.

BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 is a partial side elevational view of an exercise machine incorporating the press arm of the present invention.

Figure 2 is a partial front elevational view of the exercise machine of **Figure 1**.

Figure 3 illustrates the paths of motion for various exercises that may be performed using the exercise machine of **Figure 1**.

DETAILED DESCRIPTION OF THE INVENTION

In the following description, for purposes of explanation and not limitation, specific details are set forth in order to provide a thorough understanding of the present invention. However, it will be apparent to one skilled in the art that the present invention may be practiced in other embodiments that depart from these specific details. In other instances, detailed descriptions of well-known methods and devices are omitted so as to not obscure the description of the present invention with unnecessary detail.

With reference to **Figure 1**, exercise machine **10** is a special purpose exercise machine for performing press, fly and combination press/fly exercises. Exercise resistance may be provided by a selectable weight stack **16**. Other sources of exercise resistance may also be utilized, including individual weight plates, hydraulic, pneumatic, electromagnetic or friction mechanisms, or even the operator's own body weight. Although the present invention is illustrated as an exercise machine dedicated only to press and fly exercises, it is to be understood that the invention may also be embodied as part of a multi-station exercise machine in which a variety of individual exercise stations may be included in addition to the press arm as is well known to practitioners in the art.

Exercise machine **10** includes an upright frame member **12** and a top beam member **14**. A seat **18** for the operator of the exercise machine is attached to upright frame member **12**. Press arm **20** is coupled to top beam member **14** at main pivot **22**. Main arm members **24** are attached to transverse cross member **26**. A secondary pivot **28** is attached at each end of transverse cross member **26**. Handle arms **30** are pivotally attached to cross member **26** at pivots **28**. Pulleys **32** and **34** are rotatably mounted between main arm members **24**. Cable **36** is routed around pulleys **32** and **34** and also around pulley **38**, which is rotatably mounted on upright frame member **12**. One end of cable **36** communicates with the weight stack **16** or other suitable source of exercise resistance. The opposite end of cable **36** is attached to frame member **12**. Alternatively, cable **36** could continue on to communicate with additional exercise

stations in a multi-station embodiment. When press arm **20** is in use, forward motion of the press arm away from frame upright member **12** lengthens the path of cable **36** and thereby lifts the selected weights of the weight stack.

As shown in **Figure 1**, press arm **20** is in its rest position. The axes of secondary pivots **28** are inclined from vertical by an angle _. As a result of the inclination of the secondary pivot axes, handle arms **30** will assume a lateral rest position under the influence of gravity. As shown in **Figure 2**, the natural rest position of handle arms **30** in the lateral direction is generally straight down from pivots **28**.

As handle arms **30** pivot about the respective secondary pivots **28**, each point along handle arm **30** traces a circular path about the axis of rotation. The axes of the two secondary pivots are parallel to one another, and thus, the circular paths of corresponding points on the two handle arms **30** lie in a common plane. The axes of secondary pivots **28** are orthogonal to the axis of main pivot **22**.

Still referring to **Figure 2**, each of handle arms **30** has a generally horizontal hand grip **44** and a generally vertical hand grip **46**. As the operator performs a press exercise, hand grips **44** or **46** may be pushed straight out as in a traditional chest press exercise. Alternatively, the operator may also pull inwardly with a butterfly motion, causing handle arms **30** to rotate about secondary pivots **28**. Resistance to such inward movement of the handle arms is provided by the weight stack or other source of exercise resistance since an incremental inward movement of the handle arms causes a corresponding incremental forward movement of main arm members **24** (assuming that the operator does not relax the forward pressure on the press arm and maintains the longitudinal position of the hand grips **44** or **46**).

Referring again to **Figure 1**, handle arm **30** is inclined with respect to the secondary pivot axis by an angle β. The effective length of the handle arm is equal to ($\sin\beta$ x actual length of handle arm). A shorter effective length of the handle arms produces greater

resistance to inward movement of the arms. The same effect can be achieved by increasing the lateral distance between pivots **28**. The exercise "feel" sensed by the operator depends on several factors, including the effective length of the handle arms, the actual length of the handle arms and the lateral distance between the secondary pivots. Angling the handle arms with respect to the axes of the secondary pivots assists in achieving a natural gravity rest position for the handle arms and yields a more compact design for the press arm than would otherwise be possible if the handle arms were designed to be perpendicular to the axes of the secondary pivots.

The lateral distance between pivots **28** is slightly wider than the lateral distance between the shoulder joints of a typical user of exercise machine **10**. Also, as press arm **20** is pushed forward, the axes of pivots **28** will be near vertical at the end of the exercise stroke. The combination of these two design features results in a nearly ideal fly motion for the user of the machine.

As mentioned above, the operator of exercise machine **10** can select the manner in which a press exercise is performed. Some of the exercise movements available to the operator are illustrated diagrammatically in **Figure 3**. This figure represents an overhead view of exercise machine **10** showing the combination of straight press and press/fly combination movements that are available. Starting from the natural rest position of press arm **20**, arrows **1** illustrate a straight press exercise. Arrows **2** illustrate a press exercise with inward fly movement. Finally, arrows **3** illustrate a full butterfly exercise in which the operator begins with handle arms **30** spread outwardly and then pulls inwardly and forwardly with elbows locked.

It will be recognized that the above described invention may be embodied in other specific forms without departing from the spirit or essential characteristics of the disclosure. Thus, it is understood that the invention is not to be limited by the foregoing illustrative details, but rather is to be defined by the appended claims.

CLAIMS

WHAT IS CLAIMED IS:

1. An exercise apparatus comprising:

a frame;

a seat mounted on the frame;

a press arm pivotally coupled to the frame on a main pivot above the seat, said main pivot having an axis perpendicular to a longitudinal center line of the apparatus, said press arm including a main arm member extending downwardly from the main pivot, a transverse cross member coupled to the main arm member, and a pair of secondary arms pivotally coupled to the transverse cross member at respective ends thereof, wherein each of the secondary arms pivots without constraint both inwardly and outwardly with respect to the longitudinal center line, but each is constrained to move within a respective arcuate path that is fixed relative to the main arm member;

a selectable weight stack; and

a cable and pulley arrangement coupling the press arm to the selectable weight stack so as to provide exercise resistance for a press exercise.

ABSTRACT

An improved press arm allows an operator to perform either a traditional straight chest press exercise or to incorporate "butterfly" motion during the performance of the chest press exercise. A main arm is pivotally coupled to the frame of the exercise machine at a main pivot in the same manner as conventional press arms. The main arm includes a cross-beam to which a pair of handle arms are pivotally coupled at secondary pivots. The axes of the secondary pivots are orthogonal to the axis of the main pivot and are inclined with respect to vertical when the press arm is in a rest position. This inclination causes the handle arms to assume a natural rest position under the influence of gravity. The rest positions of the handle arms place the press arm handles at a comfortable starting position for performance of a press exercise. Stops to limit the inward or outward travel of the handle arms are not necessary. A source of exercise resistance resists both forward motion of the press arm assembly and inward motion of the handle arms.

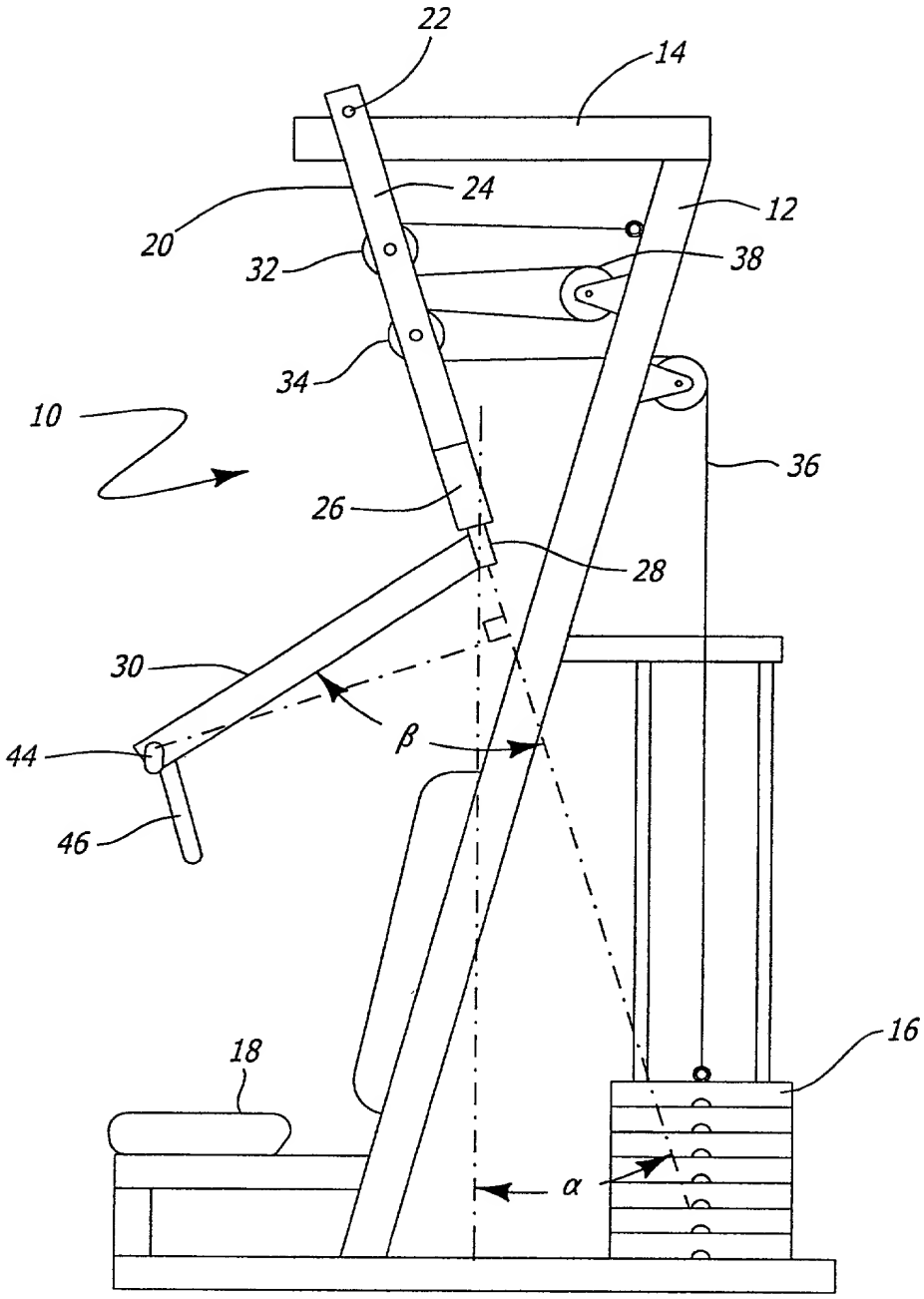

FIG. 1

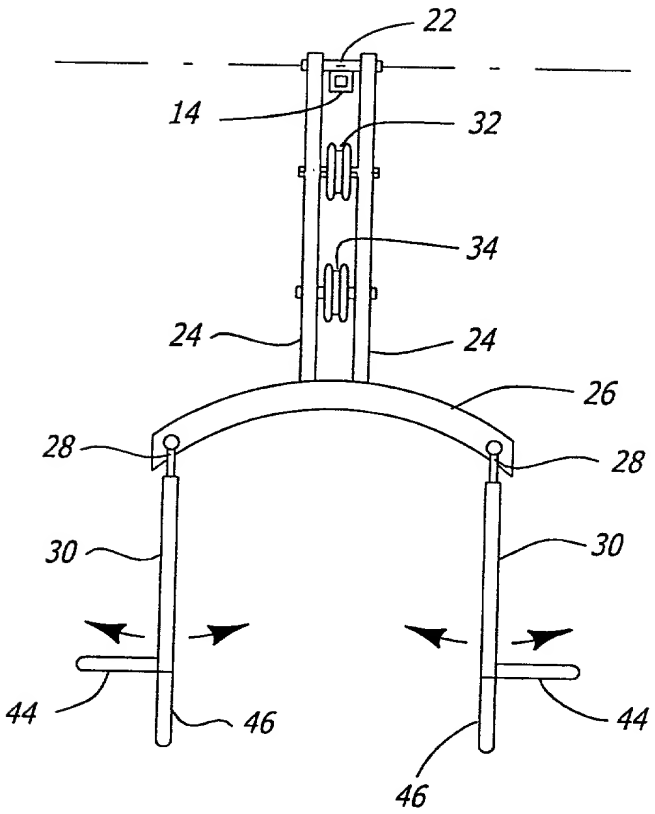

FIG. 2

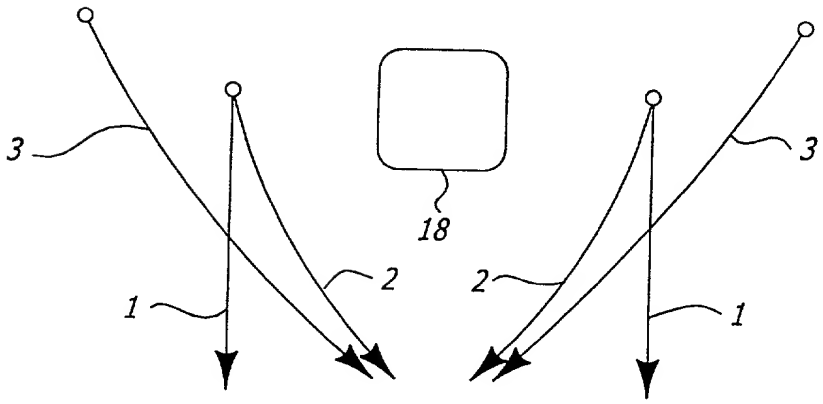

FIG. 3

DECLARATION AND POWER OF ATTORNEY FOR PATENT APPLICATION

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below, next to my name,

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled

EXERCISE MACHINE PRESS ARM

the specification of which

XX___ is attached hereto.

_____ was filed on _____ as
Application Serial No. _____
and was amended on _____.
(if applicable)

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above. I do not know and do not believe that the same was ever known or used in the United States of America before my invention thereof, or patented or described in any printed publication in any country before my invention thereof or more than one year prior to this application, that the same was not in public use or on sale in the United States of America more than one year prior to this application, and that the invention has not been patented or made the subject of an inventor's certificate issued before the date of this application in any country foreign to the United States of America on an application filed by me or my legal representatives or assigns more than twelve months prior to this application.

I acknowledge the duty to disclose information which is material to the examination of this application in accordance with Title 37, Code of Federal Regulations, Section 1.56(a).

I hereby claim foreign priority benefits under Title 35, United States Code, Section 119, of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed:

Prior Foreign Application(s)			Priority Claimed	
(Number)	(Country)	(Day/Month/Year Filed)	Yes	No
(Number)	(Country)	(Day/Month/Year Filed)	Yes	No
(Number)	(Country)	(Day/Month/Year Filed)	Yes	No

I hereby claim the benefit under Title 35, United States Code, Section 120 of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35, United States Code, Section 112, I acknowledge the duty to disclose material information as defined in Title 37, Code of Federal Regulations, Section 1.56(a) which occurred between the filing date of the prior application and the national or PCT international filing date of this application:

(Application Serial No.)	(Filing Date)	(Status -- patented, pending, abandoned)
(Application Serial No.)	(Filing Date)	(Status -- patented, pending, abandoned)

I hereby appoint BLAKELY, SOKOLOFF, TAYLOR & ZAFMAN LLP, a firm including: Aloysius T. C. AuYeung, Reg. No. 35,432; William Thomas Babbitt, Reg. No. 39,591; Jordan Michael Becker, Reg. No. 39,602; Bradley J. Bereznak, Reg. No. 33,474; Michael A. Bernadicou, Reg. No. 35,934; Roger W. Blakely, Jr., Reg. No. 25,831; Gregory D. Caldwell, Reg. No. 39,926; Kent M. Chen, Reg. No. 39,630; Lawrence M. Cho, Reg. No. 39,942; Thomas M. Coester, Reg. No. 39,637; Roland B. Cortes, Reg. No. 39,152; William Donald Davis, Reg. No. 38,428; Michael Anthony DeSanctis, Reg. No. 39,957; Daniel M. De Vos, Reg. No. 37,813; Tarek N. Fahmi, Reg. No. P41,402; James Y. Go, Reg. No. P40,621; David R. Halvorson, Reg. No. 33,395; Eric Ho, Reg. No. 39,711; George W Hoover II, Reg. No. 32,992; Eric S. Hyman, Reg. No. 30,139; Dag H. Johansen, Reg. No. 36,172; Stephen L. King, Reg. No. 19,180; Michael J. Mallie, Reg. No. 36,591; Kimberley G. Nobles, Reg. No. 38,255; Ronald W. Reagin, Reg. No. 20,340; James H. Salter, Reg. No. 35,668; William W. Schaal, Reg. No. 39,018; James C. Scheller, Reg. No. 31,195; Charles E. Shemwell, Reg. No. 40,171; Maria McCormack Sobrino, Reg. No. 31,639; Stanley W. Sokoloff, Reg. No. 25,128; Allan T. Sponseller, Reg. No. 38,318; Steven R. Sponseller, Reg. No. 39,384; Edwin H. Taylor, Reg. No. 25,129; Lester J. Vincent, Reg. No. 31,460; John Patrick Ward, Reg. No. 40,216; Ben J. Yorks, Reg. No. 33,609; and Norman Zafman, Reg. No. 26,250; my attorneys; and Robert Andrew Diehl, Reg. No. P40,992; Sharmini Nathan Green, Reg. No. P-41,410; Thomas A. Hassing, Reg. No. 36,159; Edwin A. Sloane, Reg. No. 34,728; and Judith A. Szepesi, Reg. No. 39,393; my patent agents, with offices located at 12400 Wilshire Boulevard, 7th Floor, Los Angeles, California 90025, telephone (310) 207-3800, with full power of substitution and revocation, to prosecute this application and to transact all business in the Patent and Trademark Office connected herewith.

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